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7 July 1980

USSR Report

TRANSPORTATION

No. 14

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AIR

ANTONOV DISCUSSES AN-28 AIRPLANE, OTHER DEVELOPMENTS

Moscow VOZDUSHNYY TRANSPORT in Russian 1 May 80 p 2

[Interview with Oleg Konstantinovich Antonov, doctor of engineering sciences, academician of the Ukrainian SSR Academy of Sciences, winner of Lenin and State prizes, Hero of Socialist Labor, Deputy of the USSR Supreme Soviet and general designer, by R. Kerre: "Our Airplane Will Help Oilfield Workers and Grain Growers"]

> [Text] On the eve of the 1st of May our correspondent met with Doctor of Engineering Sciences, Academician of the Ukrainian SSR Academy of Sciences, winner of Lenin and State prizes, Hero of Socialist Labor, Deputy of the USSR Supreme Soviet, General Designer Oleg Konstantinovich Antonov and asked him to tell about the work of the design office that he heads.

[Answer] Our collective considers its primary responsibility to be that of extending that help that is within its power to the country's national economy. In my opinion, it is necessary now to direct efforts not only to creating new aviation equipment but also to modernizing existing airplanes that still can be of use to the national economy.

Therefore we are trying to extract maximum use from each type of airplane, to use all its potential. For example, the An-24 has up to 20 modifications, the An-12 almost 30. This enables them to be applied to the most varied operations.

[Question] Oleg Konstantinovich, truly magnificent work is being done to develop regions of the Far North, Siberia and the Far East. Many airplanes that were created in your design bureau are operating there. What are you doing right now to improve aviation service for these regions?

[Answer] I often reread the memoirs of the Arctic flyer Mikhail Nikolayevich Kaminskiy. He wrote about what incredibly difficult conditions Arctic aviation had to operate under.

Our design office collective approaches the problems of improving aviation service for the country's extreme northern and eastern regions in all seriousness. Airplanes in the Arctic, the Antarctic and the Far East should work over a great radius of operation with increased reliability. Maximum comfort must be created for the crews, for operation under severe climatic conditions. And we are working on this.

The design office's specialists have several times gone to the Far North, the Far East and Siberia with expeditions and studied attentively the requirements, desires and proposals of the aviators and generalized them and analyzed them.

The design of aircraft intended for operation in these regions should have high reliability and the cabin should have an improved field of view. The airplanes should be equipped with the most modern radio, navigational and radar equipment so the crews can fly their craft with high precision under complicated weather conditions in a locality without reference points.

Recently we developed and offered for use on airplanes an icebreaker that protects the stabilizer against icing up. This is an inverted narrow leading-edge slat that breaks up the ice when the anti-icing system breaks down. The icebreaker has passed tests successfully on An-28 and An-32 airplanes. Right now the question about its use on airplanes that fly at different latitudes, including the Far North, the Far East and Siberia, is being solved.

[Question] Are problems of saving fuel and extending the periods of operation of airplanes also being solved in the design office that you head?

[Answer] Of course. Today, the question of fuel faces the whole world sharply. New engines are being born, not only for aviation but also for other forms of transport. And it is not so easy to "water" them. Much fuel is required. But there is another way out--aviation engines that are more economical and that are, at the same time, high powered must be created.

We are also doing much work to lengthen the service life of airplanes. We try, when designing them, to increase the service life and to make important components more reliable.

[Question] The new multiple-purpose An-28 airplane recently received the certificate of airworthiness. Tell our readers about it in detail, please.

[Answer] The An-28 will replace the An-2. This is a machine of increased reliability. It can haul 17 passengers or 1,800 kg of cargo. Only a few minutes are required to reequip the passenger variant for cargo work, and vice versa.

The An-28 will take off from and land on dirt airfields. Length of the take-off roll is about 550 meters, flying speed is 350 km/hr, and the range is 1,300 km. Each of the 2 engines has 960 hp. The airplane flies well on one operating engine and can make a go-around from the leveling-off altitude, which often is important for remote, poorly equipped fields.

Many talented specialists are at work in our design office. One of them is the lead designer of the An-28, Dmitriy Semenovich Kiva.

[Question] And a last question: what are your interests?

[Answer] I take a fancy to gardening. Despite my 75 years, I engage in water-skiing, painting, photography and I drive a car. But I cannot get aviation out of my thoughts for even an instant.

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AIR

SHEREMETYEVO-2 INTERCONTINENTAL EXPRESS OPENED

Moscow NOVOSTI DAILY REVIEW in English 19 May 80 pp 1,2

[Article from SOTSIALISTICHESKAYA INDUSTRIA of 6 May, by N. Paskhin]

[Text] Seen from above, the decagon of the Sheremetyevo-2 airport is geometrically ideal, having only one curved side, where it contacts with the inflow of passengers and freight. To a pedestrian looking at it from a distance, it is a gigantic mushroom, lying with its light-brown top to the ground. At close quarters, the massive building looks light and harmonious. However, the Sheremetyevo-2 intercontinental express is not an architectural whim but is designed to meet the dictates of the time. Sheremetyevo-I, which we may now call old, was recently overloaded. Understandably so, because 15 years ago its designers could not foresee the current tempestuous growth of the air traffic between this and other countries. Even the recent addition in the form of the passenger terminal will not be enough to meet the demand of even the nearest future, first of all the Olympic summer. As many as 60,000 passengers daily will be brought to Moscow by Aeroflot. Only a terminal streamlined for efficient handling such an army of air travelers can cope with the job.

About three years ago the competition began for the best design of Sheremetyevo-2. To many foreign companies it was a question of honour to partake in the competition. The design by the Rutherbau company and the Wilke design bureau of the West German Salzgitter building concern, was recognised the best among the competing 20 designs. The last touch to it was given by the Aeroproekt Institute in Moscow.

The design in its particulars will best be judged by the passengers. In the meantime, the new terminal's main advantage is that the passenger flows never cross. The outgoing passengers are at once taken to the second floor, while the incoming ones will be handled at the first floor.

Any operation--ticket and baggage-registering or customs--will be performed within minutes. In the waiting room there are 48 registration stands with electronic balances, information displays, and elevators to take the baggage to belt conveyers. There is also a special intercom to call to the baggage-carrying service to handle bulky freight.

The formalities over, the passengers go to the waiting room, from where they will be telescoped to the plane.

Moscow's new terminal services all types of home- and foreign-made airliners, and even those which are to appear on international routes.

Passengers in transit via Moscow or those delayed by bad weather will find themselves comfortable in the waiting halls of the nine-story tower with four restaurants, cafes and bars of the intake capacity of one thousand people. The same tower houses a conference hall, representations of foreign companies, and service rooms.

You will probably find it interesting that the new air terminal's throughput capacity is more than 2,000 passengers an hour, which is about six million a year.

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AIR

BRIEFS

DOMODELDOVO AIRPORT--The Moscow air terminal at Domodedovo will become the largest air terminal complex in the country in the near future. The chief architect of the project, Gorchakov, reported that three zones of passenger servicing are being created, each with its own departure lounges, as well as cafes, restaurant, various public service facilities, including a cinema. The railway line, with the station of Domodedovo included will be situated underground. The rails will run under the air terminal, whilst another motor road will be constructed on the surface. The underground railway station will play a major role in the future. The plan includes the construction of yet another air terminal at a distance of several kilometres from the existing one. The gigantic complex will then be able to cater for 50,000,000 passengers a year. [Moscow Domestic Service 0830 GMT 8 Jun 80 LD]

CSO: 1829

MOTOR VEHICLE

UNION AUTOMOTIVE MINISTER VISITS KUTAISI PLANT

Tbilisi KOMUNISTI in Georgian 19 Apr 80 p 3

[Gruzinform article: "Improve Vehicle Production"]

[Text] Motor vehicle production is a relatively new sector of Georgian industry, created a little more than 25 years ago. The Kutaisi Motor Vehicle Plant imeni S. Ordzhonikidze--the sector's key plant--makes vehicles characterized by high maneuverability. They operate well in difficult mountain terrain and under severe winter conditions. The plant is now undergoing remodeling; after it is completed, truck trains for the country's leading agricultural regions will go into series production.

USSR Motor Vehicle Industry Minister V. N. Polyakov came down to Georgia to inspect the progress being made in the remodeling of the Kutaisi Motor Vehicle Plant. He talked with workers and engineering-technical personnel and looked into matters pertaining to the collective's social development.

Comrade V. N. Polyakov met with GCP CC Second Secretary Comrade G. V. Kolbin.

While in Georgia, Comrade V. N. Polyakov was accompanied by GSSR Council of Ministers Chairman Z. A. Pataridze and GCP CC Industry and Transport Department Head B. Z. Barsukov.

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CSO: 1810

MOTOR VEHICLE

UDC 629. 113. 001 (091)

BRIEF HISTORY OF EARLY SOVIET MOTOR-VEHICLE INDUSTRY

Moscow AVTOMOBIL'NAYA PROMYSHLENNOST' in Russian No 4, 1980 pp 1-3

[Article by N. Ya. Lirman, Ye. A. Ustinov, V. A. Kuzin: "V. I. Lenin and Soviet Motor-Vehicle Manufacture"]

[Text] With a great labor and political upswing the Soviet people are greeting the 110th Anniversary of the birth of the greatest thinker and revolutionary, the founder of the Communist Party of the Soviet Union and the Soviet state, Vladimir Il'ich Lenin. Under the leadership of the Communist Party the workers, following along the paths pointed out by the great Lenin, have achieved great successes.

Together with all the rest of the country's economy, the motor-vehicle industry has also developed and has become today one of the advanced sectors of socialist industry.

V. I. Lenin attached great significance to the development of motor-vehicle transport as one of the most important means of uplifting the country's economy.

When the new--automotive--type of transportation appeared in the developed capitalist countries, Vladimir Il'ich took a vital interest in its emergence and development, foreseeing in this mode of transport a great future for industry and the general public.

As early as 1913 in his article "One of the 'Fashionable' Sectors of Industry" V. I. Lenin noted that the motor-vehicle business, if it provided service to most of the population, would be of enormous importance, because a society of united workers would substitute motor vehicles for a large amount of working livestock in agriculture and in the taxi business.

There was no private motor-vehicle industry in Tsarist Russia, although such talented designers as B. G. Lutskoy, I. V. Romanov, P. A. Freze, and I. P. Puzyrev proposed original models of motor vehicles.

The only enterprise which was able to set up the serial production of motor vehicles was the Russo-Baltic Car Plant in the city of Riga, which turned out 450 motor vehicles during the period 1910--1915.

In 1916 an attempt was undertaken in Russia to build five motor-vehicle plants with the aid of state credits--in Moscow (the AMO /Moscow Motor-Vehicle Company/ in the Simonov Quarter and the Russo-Baltic in Fili/, in Yaroslavl' (Lebedev Shareholding Company), in Rybinsk (Russian Renault), in Rostc -on-Don (Aksay) and one state plant in Mytishchi (Bekos). At the same time various small-scale enterprises were created, producing individual automotive assemblies, units, or parts, as well as drivers' tools. They engaged in the repair of motor vehicles or attempted to assemble them. However, the motor-vehicle industry was not created in Russia prior to the October 1917 Revolution.

In his article "One of the 'Fashionable' Sectors of Industry" V. I. Lenin essentially posed the questions of the need to organize the mass production of motor vehicles in the country, to make widespread use of motor vehicles in the national economy, and to saturate agriculture with motor-vehicle equipment.

From the very first days of the Soviet regime V. I. Lenin manifested a direct concern for the development of machine building in general and for that of transportation in particular, including motor-vehicle manufacture. Ascribing great significance to transportation, he regarded it as one of the most important sectors of social material production.

The creation of a motor-vehicle industry was a component part of the task of creating and developing machinery production as the leading element in solving the problem of creating and developing a socialist economy. During the first few years of the Soviet regime V. I. Lenin on several occasions pointed to the necessity for the technical retooling of agriculture and the creation of a powerful base of mechanized equipment for it as the deciding means for the socialist restructuring of the village.

Along with attention to railroad and waterway transport, V. I. Lenin constantly indicated the necessity of effectively utilizing motor-vehicle transport. During the initial period of the Civil War V. I. Lenin prepared a draft degree for the Sovnarkom (Council of People's Commissars) concerning the establishment of a precise number of trucks to be transmitted to the People's Commissariat of Foodstuffs. At the same time V. I. Lenin proposed a detailed elucidation of the make-up of the Motor-Vehicle Section, which was transferred by means of this decree to the jurisdiction of the Transport Division of the Supreme Council of the National Economy.

V. I. Lenin was constantly concerned about the needs of motor-vehicle plant workers. Thus, in striving to retain the personnel of motor-vehicle builders, on 14 October 1920 at a session of the Sovnarkom under the chairmanship of V. I. Lenin the question was resolved of granting a share of the Red Army front to the workers and office employees of the Fourth State Motor-Vehicle Plant in Moscow, which was producing mechanical plows at that time.

During the Civil War period V. I. Lenin devoted serious attention to the use of motor vehicles under conditions of the front. In the autumn of 1919 the Putilovskiy Plant in Petrograd received an assignment to convert a group of Austin armored cars into half-tracks, following the system of Engineer A. A. Kegress. These lightweight vehicles with their half-track drive were capable of moving through swamps, mud, and snow. They served as a communications link with staffs and to convey the wounded. V. I. Lenin ascribed great importance to these operations, and he was interested in the course of production.

On 21 May 1920 over V. I. Lenin's signature a decree of the Council of Labor and Defense was published: "On Measures for Carrying Out Military Motor-Vehicle Transport on the Polish Front by means of Motor Vehicles and Motorcycles." It contained timely measures, worked out in detail, for requisitioning a large number of motor vehicles from civilian institutions, mobilizing drivers, and directing them into the active Red Army.

Over V. I. Lenin's signature a number of decrees were established, directed at organizing and regulating the activity of motor-vehicle transport and its organs. On 31 May 1918 the Sovnarkom adopted a decree "On Reorganizing and Centralizing the Republic's Motor-Vehicle Industry." The goal of issuing this document was the necessary and correct establishment of the motor-vehicle industry within the borders of the Russian Soviet Federated Socialist Republic as well as the retention and proper utilization of the existing motor pool.

In accordance with this decree all questions related to automotive transport were concentrated in a specially created Central Motor-Vehicle Section of the VSNKh (All-Union Council of the National Economy). It had the responsibility for functioning as the central organ for supervising the development of automotive transport in the country, including the operation of motor vehicles, repairs, material supply, the production of spare parts and motor vehicles, as well as their distribution among the people's commissariats and departments.

This decree laid the foundation for the centralized supervision of motor-vehicle transport, and it created the prerequisites for developing a motor-vehicle industry.

On 10 June 1920 V. I. Lenin signed a Sovnarkom decree "On Motor-Vehicle Traffic in the City of Moscow and Its Environs /Regulations/," which was the first state document regulating the use of motor vehicles. This decree, although it was adopted for Moscow, actually became mandatory for motor-vehicle enterprises situated throughout the territory of Soviet

Russia. The basic principles established by these Regulations for the system of registering motor vehicles, issuing drivers' documents, responsibility for releasing motor vehicles from garages, as well as the fundamental requirements for traffic safety have been retained in our country down to the present time.

Within three months, on 10 September 1920 V. I. Lenin signed a Sovnarkom decree "On Financing the RSFSR's Motor-Vehicle Industry," in accordance with which the funds for maintaing the automotive transport of all departments and institutions--civilian and military--were to be released only by means of the Central Motor-Vehicle Section of the VSNKh, to which they presented their estimates and reports concerning expenditures. The Central Motor-Vehicle Section approved the estimates and was empowered to stop the release of funds for motor-vehicle maintenance.

In connection with the need for a more precise operation of transport after the end of the Civil War and the partial demobilization of automotive transport means from the army and their direction into the national economy, a resolution was adopted regarding the concentration of all modes of transport in the People's Commissariat of Railways and the granting of more independence to the local transport organizations. This was reinforced in the joint decree of the TsIK (Central Executive Committee) and the SNK (Council of People's Commissars) "On Organizing the Administration and Divisions of Local Transport," dated 7 July 1921 and signed by V. I. Lenin and M. I. Kalinin.

During the years of the Civil War and the first few years of the reconstruction period it was difficult to speak about creating our own motor-vehicle construction. At this time the automotive enterprises engaged in repairing motor vehicles of the most diverse, primarily foreign, types. As of 1 January the country had 21, 434 motor vehicles, of which 9, 772 were in operation.

The first steps of the Soviet regime in the sector of motor-vehicle construction were the nationalization of the private automotive enterprises and the creation of the first state organs of administrating the motor-vehicle business. In 1918 all the automotive enterprises were nationalized, among which were the plants of the AMO, Russo-Balt, and Il'in in Moscow, Rodzyanko, Blokhi, Borey, Breytigan, Staledub, Russkiy samokhod, Rogozin, Garkunov in Petrograd, Kazennyi samokhod, Otto, Lebedev in Yaroslavl', and Aksay in Rostov-on-Don, and Bekos in Mytishchi.

On 28 June 1918 on the day when the AMO Plant (now the Moscow Motor-Vehicle Plant imeni I. A. Likhachev) was nationalized V. I. Lenin arrived at the plant. He spoke at a political meeting before the workers of the plant and the Simonovskiy Sub-District concerning the domestic and international position of Soviet Russia.

In his speech V. I. Lenin set forth the tasks of the working task for the current moment. He called upon the Moscow proletariat to organize itself for the struggle against foreign intervention and domestic counter-revolution, hunger, and devastation. He spoke about the fact that the imperialists were imposing a war against the young Soviet republic.

This extremely important speech by the leader of the working class inspired Moscow's motor-vehicle builders to solve the tasks which the Party had set them. The workers of the AMO Plant set up the assembly of motor vehicles from separate units and parts. And the workers responded to V. I. Lenin's call for a defense of the Soviet Motherland with the creation of the proletarian Rogozhsko-Simonovskiy Regiment, which soon received its baptism of fire near Tsaritsyn and then boldly fought on many fronts of the Civil War. The workers who remained in the rear devoted all their efforts to aiding the front.

During the years which followed V. I. Lenin did not lose his ties with the group of the AMO Plant, which, it was decided, to make the founding unit of Soviet motor-vehicle construction. He was confident that within from three to five years this plant would produce new motor vehicles and would not be dependent upon foreign sources.

Also bearing witness to V. I. Lenin's attention to the AMO Plant is the fact that at his insistence on 25 February 1921 the STO (Council on Labor and Defense) adopted a resolution on directing to this plant a large group of Russian workers who had returned from the United States after the October Revolution and who had a great deal of experience in working at motor-vehicle enterprises with the assembly-line method of production.

On 5 April 1921 V. I. Lenin was invited to the plant's holiday, devoted to turning out the first motor-vehicle engines and the anniversary of the operation of courses for automotive mechanics. In a telegram sent in answer to this invitation Vladimir Il'ich sent congratulations for the good work and noted the great importance of developing the production of engines.

The mastery of motor-vehicle engine production was a definite stage on the path to the creation of our own motor-vehicle construction. The idea of creating a motor-vehicle industry and setting up our own serial production of motor vehicles was placed on the agenda as early as that time. Soviet patriots, workers at various modest-sized motor-vehicle enterprises and workshops, which were at that time the only base of the automotive sector in the country's economy, burned with a desire to create our own, independent, and powerful motor-vehicle industry.

As a result of this it was legitimate that there should appear at the beginning of the reconstruction period in 1921 a document which laid the foundation for the systematic development of Soviet motor-vehicle construction. This very important historical document, which specified the developmental path of Soviet motor-vehicle construction, was a decree of the STO (Council of Labor and Defense), adopted at the Council's administrative session of 14 September 1921 and signed by the chairman of the STO, V. I. Lenin.

This decree indicated that in order to support the Republic's automotive transport at the necessary high level by means of the organized production of spare parts for motor vehicles and the transition to new motor-vehicle manufacture, the following measures were needed:

1. To recognize the work of the automotive enterprises of the sub-departments of Glavmetall (Main Administration for Metal) of the VSNKh (All-Union Council of the National Economy), which were of extremely great importance to the state.

2. To protect all workers now in the association and working in a direct specialization from any kind of labor mobilization.

This was the way the task was posed not only of organizing the production of spare parts for motor vehicles but also of the "transition to the new motor-vehicle manufacture," i. e., the task of creating our own motor-vehicle industry. The question posed about retaining the staffs of motor-vehical builders, drivers, and mechanics thus became extremely important in solving this problem.

This Leninist document was the first very important milestone in preparing for the creation of Soviet motor-vehicle manufacture. It became a point of departure which directed the activity of Party and Soviet state institutions at the practical solution of questions connected with the creation of the automotive sector of industry.

The STO followed up this decree with concrete steps directed at creating motor-vehicle manufacture in the country. At the session of the Commission on Restoring Heavy Industry, held under the auspices of the STO on 4 March 1922, it was decreed that it was necessary to recognize in principle the need for establishing motor-vehicle manufacture in Russia on a mass scale.

With this goal in mind the decree provided for the creation of a special association to be named the "Central Administration of State Motor-Vehicle Plants" (TsUGAZ), as well as material support for its enterprises.

On 12 May 1923 the Presidium of USSR Gosplan under the chairmanship of G. M. Krzhizhanovskiy considered the question of the TsUGAZ's plan for motor-vehicle manufacture. It was decreed that approval in principle should be given to the prospective production and financial plan for motor-vehicle construction of the former AMO--TsUGAZ, as developed by Gosplan's Industrial Section. Thus, Gosplan regarded the AMO Plant as the principal industrial enterprise at which motor-vehicle production should be developed.

The decree of Gosplan's Industrial Section, dated 4 May 1923, which was confirmed by the Gosplan decree indicated above, stated that the principal source of the steady fulfillment and development of automotive transport as well as a reliable base for military defense ought to be recognized as new motor-vehicle manufacture within the country, the urgent organization of which both technically and economically was the most efficient means to obtain a motor-vehicle pool.

This document selected the type and model of truck for mass production (a Fiat with a load capacity of 1.5 tons), and it indicated the industrial enterprise to organize it (the AMO Moscow Motor-Vehicle Plant). It emphasized that it would be necessary to immediately proceed to manufacture motor vehicles by our own efforts, utilizing all the experience we had gained up to that time in this complex business.

On the basis of the above-mentioned decree of the Gosplan Presidium an agreement was concluded between Glavmetall and TsUGAZ on 31 March 1924 concerning the serial production of new motor vehicles, and time periods were specified for providing technical documentation, delivery of materials, provision of financial means, and the production of finished output. Glavmetall released 1.65 million rubles to TsUGAZ for carrying out these operations.

At the same time a five-year program was worked out under the name "Production Plan for Building 1.5-ton Trucks at the AMO Plant during the Years 1924--1929," which provided for the increasing production of new motor vehicles. This was one of the first five-year production programs in the history of the Soviet socialist economy within the limits of a single sector.

By means of the joint efforts on the part of the AMO Plant group, the supervisory organs of automotive manufacture, the Party and trade-union organizations, the serial production of Soviet motor vehicles was organized for the first time in the USSR. The first 10 AMO-F15 trucks were assembled at the plant during the period from 1 through 7 November 1924. These first few Soviet motor vehicles, painted red--the color of the banner of the fighters for communism and the Soviet regime--drove triumphantly in the procession through Red Square in Moscow on 7 November 1924 on the holiday marking the Seventh Anniversay of the Great October Socialist Revolution.

Speaking before the workers of the Automotive Plant imeni I. A. Likhachev on 30 April 1976 in connection with the awarding of the Order of the October Revolution to this plant, the General Secretary of the CPSU Central Committee, L. I. Brezhnev declared as follows:

"The capital's automotive giant is the beloved childed of our people. The Soviet people created it, depriving themselves of the most necessary things for the sake its its future, Soviet trucks. During the summer of 1918 V. I. Lenin visited the AMO Plant, as it was called then. Answering the workers' questions regarding the enterprise's future prospects, he said that thousands of Soviet motor vehicles would soon be produced within the walls of this plant.

These words of Lenin's turned out to be true. On 7 November 1924 the people who had assembled in Red Square greeted with warm applause ten trucks produced by the AMO. These were the first-born of a plant which became the progenitor of Soviet motor-vehicle manufacture, a plant which has now become one of the flagships of our industry."

Lenin's directives about the country's industrialization, about the need for the top-priority of developing heavy industry and machine building, constituted the foundation of the Party's general line in economic construction.

In carrying out the testament of V. I. Lenin, the Communist Party at all stages of socialist construction has devoted a great deal of attention to the development of machine building, including motor-vehicle manufacture.

More than 60 years of experience in economic construction in the USSR has confirmed the correctness of Lenin's policy of transforming our country's economy, based on large-scale socialist industry. In the USSR a firm foundation was created for the further development of all sectors of the national economy, an upswing in the nation's prosperity; advanced frontiers were reached in scientific and technical progress, and the defensive capability of our country was ensured.

The automotive industry was created by the will of the Party and the people. Over the years which have passed since the production of the first Soviet motor vehicles our automotive manufacture has made gigantic strides. In accordance with the resolutions of the 25th CPSU Congress more than 2 million motor vehicles were scheduled to be produced in the last year of the 10th Five-Year Plan. At the present time the automotive industry is turning out a large number of models and modifications of motor-vehicle equipment, designed for many sectors of the national economy.

It has become a tradition among Soviet people to worthily greet the birthday of the great leader with new labor achievements. In honor of the 110th anniversary of V. I. Lenin's birthday socialist competitions were inaugerated on a wide scale in this sector's plants and scientific organizations.

Soviet motor-vehicle builders successfully carried out these pledges.

The sector organized a public inspection of the standards of production in the enterprises and in the organizations of industry, transportation, construction, communications, and agriculture in honor of the 110th anniversary of V. I. Lenin's birth.

During the Lenin Jubilee Year motor-vehicle builders conducted a public review for the best work organization with regard to invention and rationalization. The Leninist principles of scientific organization of administration and labor found considerably wider utilization in the sector's enterprises and organizations.

The motor-vehicle builders are applying all their efforts to successfully carry out the state plan for 1980 and for the five-year plan as a whole.

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RAILROAD

UDC 656.222.4.021.8

INCREASE OF FREIGHT, PASSENGER TRAFFIC

Moscow ZHELEZNODOROZHNYY TRANSPORT in Russian No 3, 1980 pp 22-26

/Article by Doctor of Technical Sciences Professor G. I. Chernomordik and Candidate of Economic Sciences L. Ye. Tuvysheva: "Coping With Traffic on Heavily Traveled Lines"/

/Text/ At present a very considerable amount of work is being performed on a number of electrified two-track routes. Transportation on these lines is carried out with great national economic losses, which are connected primarily with difficulties in making "windows" available for planned repair work and eliminating the consequences of sporadic interruptions of traffic, as well as with the passing of freight trains by passenger and other express trains.

Traditional steps on increasing the traffic capacity of such routes (the shortening of the intervals between trains, the increase of the weight of trains and others) are being taken first of all to let the car traffic through. However, in connection with the continuing increase of traffic these methods no longer ensure its efficient management and the performance of additional measures on lightening the load of these two-track lines is required.

This problem can be solved by the construction of additional main tracks (third, and then fourth ones) or the building of new relieving lines, which involves the need for great capital investments and requires serious substantiations.

Let us make an analysis of these versions and evaluate approximately the feasibility of their use under different conditions (here the suburban sections are not being examined, since this is an independent problem).

The versions of the construction of a third track or a new relieving line can be compared according to the following main indicators: the increase of the carrying capacity and the traffic capacity, the operating conditions in the case of planned (for performing repairs) and irregular interruptions of traffic, the level of the transport service of the national economy and the population, as well as the current and one-time outlays, which characterize the transportation efficiency of the versions in question.

The construction of an additional main track on loaded two-track lines ensures a considerable increase of the traffic and carrying capacity. Here the amount of the increase to a great extent is determined by the assumed specialization of the third track. Various means of using the main tracks on a three-track section are possible.

The plan of the organization of traffic, which provides for the specialization of the third main track for passenger or express freight traffic (with the appropriate reorganization of the open lines and stations), is taken as the version which ensures the greatest increase of the traffic and carrying capacity for the three-track section. In this case on the two remaining main tracks, on which freight traffic will be concentrated, it is possible to achieve a very high carrying capacity. At the same time, in order not to allow a reduction of the sectional speed of passenger traffic as compared with the two-track line, it is expedient to increase the running speed of passenger trains at least to the level at which the losses of time on stopping them for crossing are offset.

With the above-indicated specialization of the three-track line it is possible to define the minimum increase of the traffic capacity as the product of the number of passenger and express freight trains, which are transferred to the third track, times the coefficient of removal. Even if we assume that one express train removes from the schedule two freight trains (given the normal ratio of the speeds of freight and passenger trains the coefficient of removal can be even higher), given the amounts of passenger traffic on freight routes, on the order of 30-40 pairs a day, the increase of the traffic and carrying capacity will be 60-80 pairs of freight trains a day, or on the average 50-60 million tons of freight a year in one direction. Moreover, such a three-track line will have an additional reserve for increasing the carrying capacity by means of a decrease of the intervals between trains and the increase of the weight of freight trains. This is all the more valid as the organization of freight traffic without passing (when the passenger and express freight traffic is assigned to the specialized third track) to a certain extent rules out the restriction of the length of the train with respect to the length of the station tracks, at least at the intermediate block stations.

It is difficult to determine unequivocally the carrying capacity of a two-track line, which has been specialized for the passage of only freight trains with approximately the same speed.

The conditionality of such calculations is determined first of all by the fact that it is impossible to establish precisely the average weight of a freight train, since the length of at least some of the trains can exceed the length of the station tracks. Along with this when organizing the passage of light-weight express trains on the third track the average load per unit of length of all other trains proceeding in the freight direction increases. Moreover, mass freight with a high weight per unit of length is usually hauled in large quantity on such loaded lines. Therefore, in the calculations it is possible to take the average gross weight of a loaded train in the freight direction to be not 3,000-4,000 tons, as is customary, but on the order of 4,000-5,000 tons (with an effective length of the receiving and sending tracks of 850-1,050 m) and correspondingly 2,500-3,000 net tons. In this case the carrying capacity of one train will be approximately 900,000-1,000,000 tons a year.

The daily time allowance for the passage of trains can be taken to be 1,000 min (excluding the time for making "windows" available for repair work, chance breakdowns and others), while the average spacing of trains can be taken to be 8 min. Then the specialized two-track line can let about 125 pairs of freight trains pass a day, or at least 110-125 million tons of freight a year in one direction and even more.

Consequently, the construction of a third track (with the transfer to it of passenger and express freight traffic) will make it possible to increase the carrying capacity of the existing two-track route by an amount under all conditions which is greater than it is possible to achieve on a new relieving line with two-track inserts, the carrying capacity of which is approximately 30-40 million tons of freight a year in one direction (with a small amount of passenger traffic). To this it is necessary to add that the assumed specialization of the third track for passenger and express freight traffic does not preclude the possibility of using it also for the passage of freight trains.

The proposals of some specialists on the use of the third main track only for the passing of freight trains by express trains, in our opinion, cannot be taken as the main version of the organization of traffic, since this requires the assurance of very high accuracy in operating, bearing in mind that passings are based on the realization of the difference in the speeds of freight and express trains.

Thus it can be considered that the increase of the carrying capacity in freight traffic with the building of a third track and its specialization for passenger and express freight traffic will be greater than with the building of a new line with two-track inserts, and under certain conditions can even be approximately equal to the increase obtainable from the construction of a new two-track line.

It should also be borne in mind that, as practice shows, the building of one-track unloading lines in the presence of an existing two-track route on the whole is inexpedient (if they do not solve at the same time other national economic problems). Under normal conditions the traffic is not diverted to these lines due to the higher cost of shipments and thereby this measure from the point of view of relieving congested lines is inefficient. Therefore, in the future it is legitimate to make a comparison of the version of a third track with the version of a line with two-track inserts or even a completely two-track line.

With the planned and chance interruptions of traffic on a three-track section in case of the failure of one track freight and passenger services will be carried out on the two remaining tracks, as on an ordinary two-track line. During this period the movement of freight and passenger trains can be organized strictly according to a parallel schedule. Therefore the losses from the interruptions of traffic due to the delays of trains, which are connected with repair work on one of the tracks of the three-track section, will be hardly perceptible.

When evaluating the analogous situation for the version with the construction of a new relieving line it should be taken into account that the bulk of the passenger traffic cannot be transferred from the existing main two-track route, since the passenger flows are usually linked with specific centers of population and have fixed stopping points of the trains on the lines. At best the through freight traffic and then, apparently, not entirely can be transferred to the new line. Therefore, on the main two-track route practically all the passenger, as well as the local service and perhaps a portion of the through freight service will be concentration on the one remaining track for the period of the interruptions of the traffic. In this connection the organization of traffic during such periods will involve great difficulties.

Thus, it is possible to presume that the version of a three-track line from the point of view of the operating conditions and the losses from delays of trains when one track is closed for the performance of planned repairs and the elimination of the consequences of chance failures in the operation of railroad equipment at any rate is not inferior to the version of a new relieving line and, perhaps, has some advantages.

It is obvious, however, that when two or three tracks fail simultaneously (slides, washouts and others), the construction of a new line is certainly more preferable. But these instances are quite rare and can hardly have a significant influence on the selection of the optimum solution.

The main advantage of the version of the relieving line as compare with the third track is the possible impact from the service of the region by the new railroad. The construction of relieving lines along with solving the main problem of ensuring the relief of the sections of the existing system, which are operating under a strain, creates favorable conditions for the industrial and economic development of new natural resources, promotes the more rapid development of the economy of the region being served, improves transportation ties, reduces the work of motor transport on the bringing in and delivery of local freight and increases the reliability and flexibility of the transportation network. Along with this the new main line solves a number of other important national economic and social problems.

When selecting the version of the increase of the carrying capacity of a high-density two-track route the additional impact from the transportation development of the region of gravitation, if it is sufficiently large, can become a decisive factor in solving the question in favor of the construction of a relieving line.

When determining this impact it should be borne in mind that a significant portion of it is realized outside the transportation sphere, while some components defy not only monetary, but in general also quantitative estimation.

The main components of the additional impact when constructing a new line, which can be estimated in value terms, are connected with the redistribution of the traffic both on the network of railroads and among other types of transportation and the new railroad, with the saving of expenditures on the hauling of local freight by means of the shortening of the distance of their delivery and bringing in to the stations and with the development of the productive forces of the region of gravitation.

The greatest difficulty in evaluating the additional impact is the determination of that portion of it, which is connected with the development of the productive forces of the region served by the new railroad. In the studies devoted to the determination of the effectiveness of new railroad construction it is proposed to use as an indirect evaluation of this factor the data on the increase of the national income from the development of the region being served. However, obviously, such an approach is not legitimate enough. The problem can be correctly solved only with the compilation of intersectorial balances for the country as a whole and the comparison of the versions of the development of the national economy given the new railroad and without it.

Such a method of solving this question is extremely labor-consuming, the obtaining of data is complicated, and at times simply impossible. Therefore, the impact, which is obtained from the development of the economy of the region of gravitation, for the present can be determined primarily by experts in each specific case individually.

It is possible to state several general views. In developed regions and given a developed transportation network of railways, particularly in the European part of the country, where the distances of motor transport delivery to the railroad are short, the effectiveness of the building of a new line can hardly be very great. On the other hand, in regions with an undeveloped transportation network and great potentials for the development of productive forces the impact from the construction of a new railroad will obviously be significant.

Thus, the extent of the advantage obtainable with the construction of a relieving line is governed entirely by the specific conditions and depends on the nature of the problems being solved in the given region.

Thererfore, it does not seem possible to solve the raised question of the expedience of implementing measures on increasing the load of or relieving high-density two-track routes by means of the construction of a third main track or a relieving line in general form, and first of all in connection with the fact that the impact, which is connected with the development of the region of gravitation of the new railroad, can be taken into account only for each object strictly individually.

Let us now compare the versions in question according to economic indicators. The question of the construction cost of third tracks on through routes at present has been poorly studied. The gained experience of building third and fourth tracks mainly on the approaches to major cities and at railroad junctions from the standpoint of construction costs is of little indication, since these operations are performed under the conditions of the high level of development and the limitedness of territory.

When determining the approximate cost of the construction of third tracks it is possible to proceed on the basis that the outlays on their construction are higher than for second tracks. In constructing a one-track line a special lane is provided for, which it is proposed to use in the future for the laying of a second track. The situation is different with the construction of a third track. This means that the construction of the subgrade and artificial structures in this version will cost somewhat more than with the laying of a second track. Moreover, as a rule, work on the demolition of various structures on the right of way of the existing two-track road, the reconstruction of the contact network and others will be required.

In the case of the laying of an additional main track on an existing two-track line considerable outlays on the reconstruction of the section stations and the intermediate block stations appear. Among them there are first of all the reconstruction of the access holes of the station, the additional development of the receiving and sending tracks and passenger platforms, the construction of pedestrian tunnels or overpasses, the construction of overhead bypasses, the transfer of passenger buildings, the reconstruction of the signaling equipment and communications and of the contact networks, the demolition of various structures located in the adjacent zone of the third track and others.

The choice of the arrangement, the amount of work being performed on the reconstruction of the stations and accordingly the expenditures connected with this are determined by the level of development of the existing stations and their formed structure, the topography of the locality, the degree of development of the grounds of the station and the zone along the existing railroad and other factors, as well as by the adopted arrangement of the adjoining of the additional main track. Here all the work at the block stations should be carried out so as to preserve as much as possible the existing station facilities and buildings.

The rough estimates made under the direction of Doctor of Technical Sciences K. Yu. Skalov showed that the expenditures on the development and reorganization of the block stations of the existing two-track railroad in connection with the construction of a third main track for the consolidated estimate can be taken to be equal on the average to 150,000-200,000 rubles per kilometer of the length of track in use. The remaining additional expenditures on the laying of the third main track as compared with the construction of second tracks according to a rough estimate will be approximately the same amount.

Thus, whereas for average system conditions the cost of construction of 1 km of second tracks can be taken to be on the order of 400,000-600,000 rubles, while the performance of additional work on the laying of the third track will require about 300,000-400,000 rubles more (including the expenditures on the reorganization of stations), for the average conditions of construction the cost of 1 km of third tracks can be taken to be approximately 700,000-1,000,000 rubles, while the cost of the building of 1 km of new one-track line with two-track inserts is on the average 1.0-1.2 million rubles, and the cost of a continuous two-track line is 200,000-300,000 more.

An advantage of the version of a third track as compared with a new line is the fact that its construction can be carried out by stages and first of all on the sections with ruling grades, where it is possible to organize the passing of freight trains, since here the difference in the speeds of passenger and freight traffic usually is sufficiently great. Moreover, the laying of additional main tracks is carried out in a region which has already been developed, where the delivery of freight is ensured during the performance of the construction work, which considerably facilitates their construction as compared with a new line.

In much the same way as the indicators of the construction cost the additional operating expenses during the construction of the third track, which are connected with expenditures on the maintenance and amortization of permanent facilities, will be an amount which is less than the corresponding expenditures for a new railroad. According to the rough estimates it can be considered that on a new relieving line the amount of the current outlays on the maintenance and amortization of permanent facilities will be approximately 10,000 rubles per kilometer more as compared with the laying of a third track.

The examined versions of the increase of the load and the relieving of high-density two-track routes also differ in the expenditures of living labor. Obviously, for serving the three-track line as compared with the existing two-track line in addition fewer operating personnel will be required than for a new independently operating line, where it is necessary to make up the complete staff.

As the preliminary estimates show, the saving of labor expenditures in the version of a third track as compared with a new relieving line by means of fewer service personnel is estimated at approximately 8-9 people per kilometer of line.

The specialization of the third track for the passage of passenger and express freight trains of both directions with the organizations of ordinary freight traffic on the two other tracks will make it possible to eliminate the expenditures connected with the stops of freight trains for their passing by quicker trains. Here, however, losses will arise from the delays of express trains for crossings.

The expenditures resulting from the stops of passenger trains for crossings are determined by the average cost of one crossing and their total number on the section. The cost of a stop of a passenger train includes the expenditures directly connected with the losses of time and of the kinetic energy killed in braking. The estimates showed that the cost of 1 hour of idle time of a passenger train for average conditions is about 75-80 rubles (excluding the time lost by passengers). The average amount of idle time of a train for crossing can be taken to be roughly one-fourth of the average travel time of a pair of trains over an open line (round trip) plus the sum of the station intervals.

In determining the losses of kinetic energy on the stopping of a train the expenditures, which are proportionate to 1 ton-kilometer of the mechanical energy killed in braking, can be taken to be about 0.1 ruble/ton-kilometer.

The determination of the expenditures directly connected with the losses of time by passengers is of some difficulty for the monetary valuation of a stop of passenger trains during crossing. In the estimates the rough cost of 1 passenger-hour was taken to be equal to 0.5 ruble.

Table 1

Amounts of passenger traffic, pairs of trains a day	Cost of one stop, rubles	Annual expenditures, percent			
		Total	including those connected with losses of time		those connected with losses of kinetic energy in braking
			on delay of the train	on delay of passengers	
20	160	100	18.8	80.0	1.2
30	121	100	18.7	79.3	2.0
40	101	100	18.6	79.2	2.2

The data on the distribution of the components of the annual expenditures on stops of passenger trains for crossing depending on the amounts of traffic per kilometer of length of track in use are cited in Table 1. As is evident from this table, the expenditures connected with losses of time on the delay of trains and passengers make up about 98 percent of the expenditures caused by the crossings of passenger trains on the third track. These losses of time on the crossings of passenger trains can be offset by increasing the running speeds of passenger traffic so that the total time the passengers are in route would be the same as on the existing two-track section. In order to meet this condition it is necessary to ensure equality between the time it takes a passenger train to cover 1 km of track on the existing two-track section and the sum of the time, during which the passenger train will cover 1 km of track on the specialized three-track section, including the time of the stops for crossings.

On the basis of this condition and taking into account that the average running speed of passenger trains on the existing electrified two-track line is about 70 km/hr, it is possible to determine what the average running speed of passenger trains on the specialized third track should be. The estimates show that it should be increased from 70 to 100-110 km/hr. Thereby the condition of the equality of the time the passenger trains are in route on the former two-track, but now three-track section will be met. This will make it possible in future calculations when determining the additionally arising losses on delays of passenger trains in crossing for the version with the laying of a third track to exclude the expenditures which constitute the bulk of these expenditures.

The question of the possibilities of increasing the speeds of passenger traffic and of the demands, which are made on the main equipment of transportation from the standpoint of reliability and the assurance of traffic safety, is examined in detail in a number of works. From a technical standpoint the realization of average speeds of passenger traffic on the order of 100-110 km/hr does not offer particular difficulties, since practically all the components of transportation (the track, the rolling stock, the braking equipment, the communications system and others) have been prepared for this.

However, the increase of the running speeds of traffic will require some additional transportation costs. When the speed is increased, the expenditures connected with the stopping of trains for crossing increase, since the losses of energy increase in proportion of the square of the speed at the start of the braking. The expenditures on fuel or power and on the repair of the track and the rolling stock during movement of the trains increase with an increase of the speed. Moreover, to achieve the higher speeds the power of the locomotives will have to be increased, which will lead to the corresponding increase of the cost of the stock of locomotives.

With an increase of the average speed of the traffic from 70 to 100-100 km/hr, that is, by approximately 1.5-fold, the driving of passenger trains can be organized either by dual traction with the use of locomotives, which are turned on the approaches toward the sections of the three-track line (with one brigade), or by more powerful locomotives.

The results of the calculations of the annual adjusted, additionally arising expenditures, which are connected with crossings in the case of an increase of the average running speed of passenger trains depending on the amounts of traffic (in thousands of rubles/km), are cited in Table 2. As is evident from these data, the expenditures connected with crossings in the case of an increase of the running speeds of passenger trains are extremely small, especially as compared with the amount of the losses in the organization of the crossing of passenger trains for traffic speeds at the level of the existing ones, which attests to the great effectiveness of the measure on increasing the running speeds of passenger trains.

Table 2

Amounts of passenger traffic, pairs of trains a day	Annual adjusted expenditures on crossings with an increase of the traffic speed from 70 to 100-110 km/hr, thousands of rubles/km			
	Total	Including		
		through the loss of kinetic energy	through the increase of the mechanical energy of the forces of resistance	through the introduction of more powerful locomotives
20	4.4	0.6	2.6	1.2
30	7.2	1.4	4.0	1.8
40	12.7	2.9	7.4	2.4

The operation of a three-track line with the segregation of passenger traffic on one of the main tracks will make it possible to eliminate the expenditures connected with the organization of passings of freight trains by quicker trains.

With allowance made for the obtained saving due to the elimination of the stops of freight trains for passings with the segregation of passenger traffic on the third track the expenditures connected with the organization of the crossing of passenger trains on the third track (with an increase of the average running passenger speeds to 100-110 km/hr as compared with 70 km/hr on the two-track section) are very small and constitute about 3,000-6,000 rubles a year per km (see Table 3).

Table 3

Amounts of passenger traffic, pairs of trains a day	Annual expenditures connected with the increase of the speed of passenger traffic with allowance made for the saving of expenditures on the elimination of passings of freight trains, thousands of rubles/km
20	2.4
30	3.1
40	5.7

Now it is possible to tally some results. The comparative analysis made of the versions of the increase of the load or the relieving of high-density two-track railroads shows that the increase of the carrying capacity with the construction of a third main track with the specialization of two tracks for freight traffic is approximately equivalent to the increase of the carrying capacity, which is obtainable with the construction of a new one-track line with two-track inserts, and under some conditions even to the carrying capacity of a new two-track line. In this case the passenger and express freight traffic should be put on the third track, and the running speeds of passenger trains should be increased so that the section speeds of express trains (with allowance made for their stops for crossings) would be the same as on the former two-track line at ordinary speeds. The losses obtained here are extremely small and to a considerable extent are offset by the saving of expenditures from the elimination of the passings of freight trains by passenger trains.

The version of the construction of a new line will also not have an advantage according to the conditions of the performance of repairs on one of the tracks, since during this period it is practically impossible to remove the passenger traffic from the existing route and to transfer it to the relieving line.

The construction of a third main track will require a smaller additional operating contingent than the construction of a new line and will have a lower cost. Moreover, it must be taken into account that the construction of a third track can be carried out in stages and first of all on the most diffifult open lines by topography, while the impact from a new line can be obtained only after its complete construction. The current outlays on the maintenance and amortization of permanent facilities of a new relieving line are also higher as compared with the version of a third track.

Thus, the version of the laying of a third track in many respects from the standpoint of transportation is more feasible than the construction of a new relieving road, if only we do not consider that the excessive concentration of traffic on the three-track line can adversely affect operating work, especially of major stations. At the same time the impact from the transportation development of the region of gravitation is a significant advantage of the new relieving line.

Therefore, the question of building a third main track or a new relieving line should be solved in each specific case with allowance made for those positive and negative aspects, which each version gives. In regions with a ramified transportation network and a developed economy the laying of third tracks can in a number of cases be more preferable as compared with the construction of a relieving line.

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TRAFFIC PROBLEMS, TURNAROUND TIME OF RAILROAD CARS EXAMINED

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/Article by Doctor of Technical Sciences Ye. A. Sotnikov: "The Organization of Traffic and the Car Turnaround"/

/Text/ Speaking at the November (1979) CPSU Central Committee Plenum, Comrade L. I. Brezhnev indicated the need for the radical improvement of the operation of the railroads. The workers of the steel main lines treated with deep understanding the preoccupation of the party with the state of affairs in rail transport and, recognizing the great responsibility placed upon them, are performing much work on eliminating the serious shortcomings in the transportation process and improving the transportation service of the national economy and the population. Questions of the urgent straightening out of things in transport, the tightening up of discipline in all its units, the assurance of great coordination with the consignors and consignees in the planning and organization of traffic and the loading and unloading of cars are at the center of attention of the managers of the roads, departments, stations and other line enterprises, the traffic control personnel, engineering and technical personnel and production leaders.

One of the most important problems of the improvement of the operation of rail transport is the acceleration of the turnaround of the car. The conditions of the operation of all the main services, subdivisions and enterprises of the railroads are reflected quite completely in this comprehensive indicator. However, in recent years the turnaround of the car has been slowing down, which has caused some difficulties in the increase of the volume of traffic. Therefore, today it is especially important to study the causes of the situation which has formed and to determine the ways to improve the transportation process. The analysis of the fulfillment of such an indicator as the turnaround of a car will make it possible here to ensure a comprehensive approach to the solution of this main problem.

The Analysis of the Present Situation

Let us examine the nature of the change in the intensity and structure of the turnaround of a car in recent times.

In the course of a year freight cars are received for loading approximately 50-60 times. But in the past two to three years due to the slowing of the turnaround of a car this number has decreased by 6-7 deliveries.

Estimates show that under these conditions the deliveries of new freight cars are being used mainly only for offsetting the losses of loading resources, which are connected with the slowing of the turnaround of a car. If the car turnaround time remained even unchanged, the new deliveries of rolling stock would make it possible to increase the traffic volume by considerable amounts.

The turnaround time of a car is divided structurally into three approximately equal parts: being on trains (in traffic and at intermediate stations)--30 percent, under loading operations--33 percent and at technical (classification and sectional) yards--37 percent. In recent years the proportion of the time that the cars have been at technical yards has increased by more than 2 percent due to the shortening of the time that they are on trains.

Statistical data show that the slowing of the turnaround of a car is occurring for all components. Thus, in 1978 as compared with 1977 of the total time of the slowdown 34.8 percent was made up by the increase of the time of being on trains, 30.8 percent--under loading operations and 26.8 percent--at technical yards. In 1979 the bulk of the increase of the turnaround of a car (more than 60 percent) occurred at technical yards. However, it should be taken into account that this was connected first of all with the untimely pulling out of ready trains and the increase of the layover of cars in anticipation of departure.

The change in the turnaround time of a car is occurring ununiformly by regions of the network. In recent years the most significant losses have occurred on the traverse of the network, which is located in the easterly direction from the Gor'kiy and Southeastern railroads up to the Far Eastern Railroad inclusively. At the same time such railroads as the October, North Caucasus, Belorussian and several others, which are located on the western traverse of the network, even accelerated the turnaround of the car in 1979 as compared with 1978.

This shows that the measures aimed at expediting the car turnaround should influence all its components. Particular attention should be devoted to improving the production operations on the eastern traverse of the network.

Frequently the slowing of the car turnaround is linked only with the operation of the rolling stock, but this is far from the case. Owing to the fact that cars are being laid over more and more on the yard tracks, it is necessary to increase the number of tracks to perform the same amount of handling work. But the number of tracks in the network and for its individual regions is changing comparatively slowly, therefore with the worsening of the indicator "car turnaround" a portion of the tracks, which are taken up by cars or by rolling stock which has been laid over for a long time, is as if taken out of operation. As a result, the effective capacity of the track development of stations, sections and routes decreases.

It has been established, for example, that the slowing of the car turnaround on the railroads of the Urals, Siberia and the Far East, which occurred in mid-1979, led to the additional occupation and the corresponding removal from operation of about 1,000 yard tracks. It is easy to imagine the consequences of this--on many sections extremely few tracks remained for the passing and crossing of trains, the classification and sectional yards did not have tracks for receiving them.

The slowing of the car turnaround is also causing an increase of the need for engines. This is natural, since the number of cars at the yards and trains on the sections is increasing. Meanwhile, the number of engines operating in the network of railroads is changing negligibly. Therefore, with the slowing of the car turnaround in some regions of the network the proportions between the rolling stock and engines are often violated. It has been established that for average network conditions the ratio between the average daily productivity of engines and cars is approximately 1 : 95. This means that one train engine on the average ensures the movement of 95 cars. But the slowing of the turnaround and the increase of the number of cars on the railroads of the Urals, Siberia and the Far East in mid-1979 led to a marked disruption of this normal ratio between the rolling stock and engines. As a result, some of the cars were laid over for a long time due to the shortage of engines.

The slowing of the car turnaround also requires an increase of the operating personnel, since the need for rolling stock and track development increases.

Consequently, all the operating activity of rail transport depends on the intensity of the car turnaround. It is important to note that the results of the work of not only railroad workers, but also the workers of all the sectors of industry, which are connected with the delivery to rail transport of equipment and materials and with transportation service, are reflected in the intensity of the turnaround. For example, the delivery of low quality rolling stock decreases the speeds of trains, the inadequate development of the loading area increases the layovers of cars for loading and unloading and others.

All this attests to the great state importance of expediting the car turnaround and the need for a comprehensive approach to the solution of this problem.

The practical lack of reserves of traffic capacity on a number of the most important routes is one of the important features of the work of rail transport under present conditions. This is creating great difficulties in moving the volume of car traffic over them and is one of the main causes of the slowing of the car turnaround.

This situation arose as a result of a sharp decline, particularly starting with the Sixth Five-Year Plan, of the specific amounts of capital investments in rail transport in the total amount of capital investments in the national economy (in comparable prices). Thus, whereas during the prewar years they were 10.2-10.7 percent of all the capital allocated for the development of the national economy, in 1946-1955 they were 4.9-7.7 percent, in 1956-1965--3.2-3.4 percent, while beginning in 1966 and through the present they have been 2.6-2.8 percent.

Experience indicates that such a ratio does not ensure the complete meeting of the needs of industrial and agricultural enterprises, construction projects and organizations for transportation. In the immediate future the USSR Academy of Sciences and sectorial scientific research institutes need to solve the problem of optimizing the distribution of capital investments.

Today the accelerated construction of new, first of all relieving lines, the increase of the load of existing routes, which are parallel to the high-density main lines, the construction of second, and in a number of cases third and fourth main tracks, the development of yards and the repair base, the strengthening of track services and other measures, which are aimed at the increase of the traffic capacity of the sections and the handling capability of yards, are required. But it should be taken into account that the performance of these unquestionably necessary measures requires certain expenditures of time.

At the same time the problem of expediting the car turnaround also involves the solution of a group of problems of a current nature. It is possible to name three major factors which are causing the decrease of the quality of operational work. They are the existence of serious shortcomings in the planning of traffic, the decrease of the reliability of the operation of equipment, especially in the engine, track and car managements, the complication of the performance and the shortcomings in the organization of operational work. Let us examining these questions.

The Planning of Traffic and the Car Turnaround

In a number of cases in some regions of the network rolling stock is beginning to accumulate rapidly--at first hundreds, then thousands, and frequently tens of thousands of cars. As a result the work of the traverse is being markedly complicated, which has an extremely adverse effect on the operation of rail transport as a whole. This situation can be caused by the effect of a number of factors.

First of all this is connected with the lack of planning of loading with allowance made for the unloading capabilities of the consignees. From year to year situations are repeated, in which major consignees, for example, those such as ports, new construction projects, metallurgical combines, during certain periods do not cope with unloading. It would seem that the planning of shipping to such consignees should take into account their capabilities. But this does not happen and the consignors continue the shipment without any restrictions.

In 1979 the greatest accumulation of cars with freight in anticipation of unloading occurred through the fault of the enterprises, which are adjacent to the Tyumen' and Surgut departments of the Sverdlovsk Railroad, the seaports of Vanino, Nakhodka and Vladivostok (the Far Eastern Railroad), the river port of Osetrovo (the East Siberian Railroad), the Kuznetsk Metallurgical Combine and the Western Siberian Metallurgical Plant (the Kemerovo Railroad), the Yakutskstroy Association (the Transbaykal Railroad) and a number of others. The surpluses of cars for these enterprises during some months are so large that the railroads are not able to carry not only this rolling stock, but also the cars addressed to other enterprises. In this connection a surplus of the fleet of cars is forming on the roads and entire traverses of the network not so much in local traffic as in transit.

The surplus of through freight occurs on practically all the roads of the traverse, in which cars accumulate in anticipation of unloading. As a result, the presence of loaded cars on the road, where unloading is complicated, is on the whole, for example, 10,000-12,0000 cars, while the total number of cars, which cannot be forwarded in due time over the traverse of the network, amounts to 40,000-50,000 cars, and at times even more.

It is also necessary to take into account the fact that in rail transport it is impossible to organize the formation of trains, so that the loaded cars for specific railroads, for example, those where unloading is complicated, would follow in specialized trains. The point is that this would require the building of a large number of additional classification yards and would lead to a considerable increase of the layover of cars for accumulation at the technical yards. Therefore, the cars addressed to different railroads and destinations follow a considerable portion of the way together and the delay in the movement of a portion of the volume of car traffic adversely affects the cars of many other destinations.

What is to be done, when some consignees do not accept in due time all the cars being shipped to them? There is one answer--to plan the loading and the sending of the cars to railroads with allowance made for the unloading capabilities of the consignees. However, here it should be taken into account that the plans of the attachment of suppliers to customers are drawn up a year in advance and it is not always possible to foresee in advance the occurrence of difficulties with unloading, especially for those consignees, whose steady operation depends on the filling of warehouses, the timely arrival of ships, weather conditions and others.

Therefore USSR Gossnab, USSR Gosplan, the ministry-consignors and consignees should adjust in due time the plans of the attachment of suppliers to customers, when the unloading points cannot be readied in due time for the receipt of freight.

It is also necessary to have certain reserves of the capacity of track development, which are designed for the temporary standing of a certain number of cars, which at the given moment cannot be unloaded. Otherwise these cars will be laid over at the classification and suctional yards, complicating the passage of the transit volume of trains.

It is appropriate to recall today how the formation of surpluses of cars in such cases was anticipated in past years. A procedure was established, in case of which the railroad of destination in case of a sharp increase of the arrival of freight as compared with the unloading capabilities of the consignee sent a convectional telegram--the banning for all the railroads of the network on sending freight to this address. Such measures are also mandatory today, since practice shows that it is not possible to avoid major jams on the railroads only by annual and monthly planning. Moreover, these plans in fact do not take into account the possible daily concentrations of loading and unloading, temporary difficulties with unloading for various reasons and others.

In our opinion, a special operations group consisting of representatives of USSR Gossnab, the Ministry of Railways, the ministry-consignors and consignees should be set up, which would have the power to make day-to-day decisions on this question on the basis of state, and not narrow departmental interests.

Another factor, which is conducive to the formation of surpluses of rolling stock, is the irregularity of the shipment of freight. Under the conditions of a high level of filling of the traffic capacity of a number of routes this causes during periods of concentrated shipment the accumulation of freight cars in anticipation of passage. It is not always taken into account that the volume of car traffic, which follows over a railroad line, is the sum of tens of thousands of individual volumes of car traffic between different enterprises, which send and receive freight. And whereas the average annual and average monthly volumes of car traffic are formed on the basis of the plan of production and consumption, the daily formation of freight cars on some line can deviate considerably from the average values. There are many factors which cause this. Among them are the fulfillment of the plan of production of products at the consignor enterprises, the need for the rush delivery of freight to one address or another, the availability of empty cars for ensuring shipment, the operating conditions of the consignors and consignees, the conditions of the movement of the volume of car traffic.

Analysis shows that for congested routes the deviations of the daily traffic of freight cars from its average monthly value is approximately 17 percent. For example, with an average monthly volume of car traffic of 5,000 cars a day the deviations can be ±850 cars a day, while the daily volume of car traffic can range from 4,150 to 5,850 cars. Therefore, the conclusion that the traffic capacity of some route corresponds to the average monthly volume of car traffic still does not assure the successful accomplishment of the shipments. In this connection it is necessary to seek opportunities to moderate the daily irregularity and to provide for such measures in the plans of traffic. This concerns first of all the improvement of the transport work of enterprises on Saturdays and Sundays and the increase of the rate of cargo operations on the days following them.

It is necessary at this time to increase the demands on all enterprises of the national economy in the area of increasing the smoothness of the loading and unloading of freight. Estimates show that due to the unsatisfactory organization of cargo work on days off the losses of freight handling for the network as a whole amount of 60 million tons a year. It must be taken into account that the decrease of the reserves in rail transport, by means of which the railroads previously were able to compensate for the consequences of the uneven organization of cargo operations at enterprises, now requires the assurance of their more uniform operation.

We should also add the urgent tightening up of planning discipline in the fulfillment of the assignments on shipment to the railroads of destination. Analysis shows that some railroads are allowing a considerable nonfulfillment of the plans of shipment to railroads of the western traverse of the network with a considerably higher level of fulfillment of these plans for the railroads of the eastern traverse and their overfulfillment in local traffic. The uniform fulfillment of the plan of shipment by railroads of destination would create a more favorable situation with the movement of the volumes of car traffic.

On a number of routes, especially with diesel traction, the available traffic capacities of the sections and stations are not being fully utilized due to the inadequate reliability of the engines, as well as the track and the cars. This is causing delays of trains in anticipation of being allowed to pass over the sections and, consequently, a slowing of the turnaround of cars.

Demands on the Increase of Reliability of Equipment

The losses in the car turnaround from inadequate reliability of the equipment are very appreciable. Thus, the delays of trains, which are not envisaged by the traffic timetable, are about 10 percent of all the train-hours fulfilled during the year, which promotes a reduction of the sectional speed by approximately 4 km/hr and the slowing of the car turnaround by nearly 5 hr. Moreover, it has been established that the decrease of the reliability of engines, track and cars reduces the traffic capacity of lines, and this is the cause of the decline of the amounts of traffic through junctions and the decrease of the weight of trains on some lines.

It is necessary to note that the steps taken in recent years on improving the condition of the equipment of rail transport have not ensured if only a stabilization of the level of breakdowns in a number of its main sectors. The number of warnings on the condition of the track is increasing, which is adversely affecting the running speed of train traffic. The occurrence on some routes of entire sections with an unsatisfactory condition of the track is causing alarm. As before, the delays of trains on main lines with diesel traction are significant. The axle box assembly of the car accounts for 70 percent of the breakdowns which cause delays of trains through the fault of the car service. The damages to cars during the performance of switching and loading operations are great.

All this requires the implementation of resolute steps on increasing the reliability of the rolling stock in transit.

One of the most important problems is the achievement of conformity between the operating and maintenance conditions and the design features of all types of railroad equipment. Analysis shows, for example, that the failure to observe the dates of the repair and inspection of diesel engines hastens the increase of the number of calls of engines for unscheduled repairs, which, in turn, diverts the workers of the car barn from the performance of preventive work. As a result, the flow of failures is increasing and it is already becoming difficult to eliminate the unsatisfactory condition of the entire car barn fleet of engines.

A similar situation has also formed in the track service, where due to shortcomings in the planning of repair work a tendency has been noticed for a rapid increase in the number of defective rails and ties, which lie on the route, and the sections with rails which have already let the standard tonnage through.

The presence in the fleet of worn out freight cars and rolling stock of obsolete designs is an adverse factor.

The increase of the reliability of the operation of the track and rolling stock to a considerable extent depends on the railroad workers. The experience of the Belorussian, Northern and East Siberian railroads on taking into account the deployment and condition of engines, including with the use of computers for this purpose, should be disseminated extensively on all the main lines. It is necessary to speed up the work on the building of enclosed maintenance stations and shops for the performance of the planned maintenance inspections of TO-3 engines on the basis of the use of dismountable assembled components of the hangar type and to implement a set of measures on the increase of the quality of plant and car barn repair, first of all of 2D100 diesels and diesel engines of series TE3 and 2TE10.

It is necessary to remove categorically from networkwide usage freight cars which have run beyond the set life, to consolidate on freight handling railroads the base for the repair of cars by means of the expansion of the network of mechanized stations for the preparation of cars for shipments. In the next few years it is necessary to replace the stock of old-fashioned sliding bearings with two-ply bearings, which have a three-fold greater no-failure life, it is also necessary to complete the replacement of obsolete types of PONAB-2 equipment with improved PONAB-3 equipment, which will make it possible to reduce the number of cases of the groundless stops of trains due to the heating up of the axle boxes.

In the area of track service it is expedient to expedite the conversion of especially congested and weed-infested sections of track to asbestos ballast, to ensure the making of "windows" 1.5-2 hr long available for the performance of operations on the current maintenance of the track with the use of road machinery for the burnishing of the rails, the tamping of the ties, the tightening of bolts and others operations and to increase the output of switch levers with a continuous rolling contact surface on reinforced concrete blocks and with hardened components of the members.

The solution of the enumerated and a number of other problems will make it possible to increase the reliability of the operation of equipment.

At the same time the workers of industry should also solve important problems of increasing the reliability of railroad equipment. As was noted at the November (1979) CPSU Central Committee Plenum, it is necessary to increase the quality of some types of equipment being supplied to the railroads, particularly diesel engines, and to overcome the regular lag behind the needs for deliveries of spare parts, materials and transient equipment for the minor repair and maintenance of engines and cars. The deliveries of engines, rails, ties and road machinery should completely meet the needs of the railroads for rolling stock and the repair of the track. Their untimely and incomplete fulfillment makes it impossible to halt the increase of the number of delays of trains due to the storage of engines, the reduction of the speed of traffic as a result of the number of defective rails and ties on the route.

In our opinion, at this time it is necessary in addition to place at the plants of industry a number of orders for rail transport for the equipment in the shortest supply. Transportation itself is a large consumer of products and the priority meeting of these needs is necessary, since otherwise the assurance of the delivery of other products to the place of their consumption becomes difficult.

Improvement of the Organization of Operating Work

The high level of the load of many of the most important routes, shortcomings in the use of and the low reliability of equipment are creating considerable difficulties in the organization of operating work. Thus, the delay of a train on the open line, for example, for 1-2 hr, leads on high-density lines to complications with the progress of trains for 7-14 hr. Fluctuations for various reasons in the volume of train traffic on such lines inevitably form lines of trains in anticipation of passage over the sections and through stations. The inadequate number of engines leads to an increase of the layover of trains at stations, which in turn causes the overfilling of the yards with cars and delays of trains due to nonacceptance. At the same time it is necessary to seek and implement measures on the improvement of the organization of the transportation process under these conditions as well. Along with the elimination of the surpluses of rolling stocks in some regions of the network the quality of shift and daily planning should be improved, the degree of irregularity of train and freight work should be reduced, the technological discipline of the meeting of the traffic timetable of trains, the plan of the formation and the procedure of dispatching the volumes of car traffic should be tightened up, the organization of the transportation of local freight and the operation of the stations should be improved. The responsibility of enterprises for the timely loading and unloading of cars should be increased. Let us dwell on some of these questions.

Today on many railroads shortcomings occur in the organization of the shift and daily planning of train work. In conformity with the prevailing instructions, which specify the procedure of shift and daily planning, at 1500 the plan of the passage of trains for the forthcoming day is drawn up, while at 2100 and 0900 of the current day the amounts of the passage are adjusted. The actual deviation of the amounts of passage from the planned amounts is up to 10 percent. Since at many such stations the interchange of engines takes place, the lack of conformity of the supply of engines to the planned amounts of traffic causes their delay at the stations while waiting for train engines.

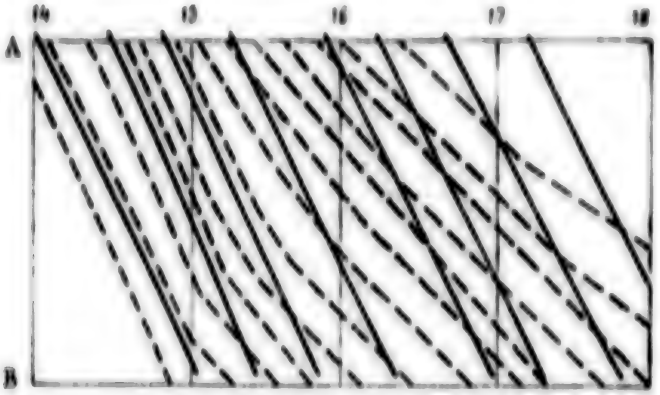
This, in turn, leads to the untimely pulling of the ready trains from the classification yards--here their layover in anticipation of departure is constantly increasing. In 1979 as compared with 1978 this type of layover increased by approximately 0.1-0.15 hr. Estimates showed that a delay in anticipation of departure of 0.1 hr causes an increase of the layover of cars in the classification yard as a whole by 0.3-0.4 hr.

Consequently, it is necessary to increase the responsibility for the fulfillment of the plan of passage of trains, including by stepping up the monitoring by the ministry of the operation of interrailroad junction stations. It is also necessary to take steps on improving the organization of the work of the inspector-traffic controllers of the Main Administration of Rail Traffic of the Ministry of Railways, particularly by means of the use of computer equipment.

Another shortcoming in the organization of shift and daily planning involves the considerable concentration of the passage of unit trains made up of empty cars. The practice of preferential movement of such trains during the delivery period has arisen. On the Dnepr, Kuybyshev, South Urals and other railroads during some hours of the day only empty trains are turned over to the neighboring railroads, up to 10-15 and more of these trains follow one another at minimum intervals over the sections.

This leads to the slowing of the progress of freight trains, the irregular distribution of engines on the sections of their usage, the halt for 2-3 hrs and more of the receipt and departure of trains with loaded cars from the classification yards and irrecoverable losses of their handling capacity.

The system of moving empty unit trains should be based on the introduction of specialized schedules for them in the traffic timetable with an even distribution by periods of the day. The periods of the maximum formation of empty cars are known on the railroads and in the departments, therefore the attachment of certain lines or others of the schedule to the departure of trains from the station is practicable. It is expedient in the very near future to organize the traffic of trains on a number of routes of the network according to this technology.



The role of the traffic timetable can and should also be enhanced by halting the practice being used on a number of railroads--the increase of the number of trains being supplied to the interrailroad junctions during the period from 1400 to 1800 in considerably greater numbers than is specified by the traffic timetable of trains. Let us examine the consequences of such an organization of traffic in the example cited in the diagram. Here AB is the section before junction station B. The lines of the traffic timetable for freight trains are indicated by the solid lines, while the actual departure of trains is indicated by the broken line. During the delivery period 1.3- to 1.4-fold more trains are often let out onto the section than is specified by the maximum timetable. But here they do not take into account the technical capabilities of the open lines and stations, which under normal operating conditions cannot let through more than the scheduled number of trains. The results of such an "organization" of traffic adversely affect the sectional speed, the turnaround of engines, the conditions of the work and rest of the engine brigades.

Delays of the trains running ahead cause increasing delays of following trains, a train proceeds along the sections for 3-4 hr and more instead of, for example, 2 hr. The increase of the turnover of trains in such cases is achieved at a very dear price. But in the mean time during other periods the lines of the timetable are left out and the junction does not operate at maximum performance. The situation represented in the figure is typical of some junction stations and the sections adjacent to them.

In order to streamline the operation of the interrailroad junction stations it is necessary to carry out the transfer of trains strictly according to the lines of the traffic timetable, in conformity with which the delivery of the volume of train traffic should be carried out. This will increase the level of fulfillment of the traffic timetable, including of passenger trains, and will shorten the delays by neighboring railroads of trains due to nonacceptance, which in 1979 increased considerably.

Under the conditions of a surplus of operating stock and the unstable operation of a number of junction stations on railroads they are attempting to increase the passage of trains by means of the diversion of the volumes of train traffic from the normal route. In some months of 1979 the roundabout transfers increased 1.3- to 1.5-fold as compared with 1978. Any such diversion without the permission of the Ministry of Railways should be categorically prevented, since it entails great additional expenditures. The violations of the plan of the formation of trains are considerable, which increases the reclassifying of cars in the network by approximately 3 percent.

Thus, the improvement of the methods of managing operating work is today one of the main problems.

The increase of the labor productivity of railroad workers is also an important question. Let us direct attention to such reserves as the existence of about 45 percent of the switches which are thrown manually, the excessively high percentage of the manual braking of cars in the gravity yards, the low level of the mechanization of labor in the track, car and other services. But the assimilation of these reserves requires time and capital, while the decrease of manpower resources in such cases is occurring rapidly. The attachment of workers from other railroads is also of little help, since along with an increase of expenditures it increases the turnover of personnel among those assigned themselves.

Therefore, planning organizations need to provide railroad workers with those social conditions which would ensure the attachment of personnel. The failure to observe this principle will cause the deterioration of the transportation service not only of the enterprises of industry and agriculture, which are being newly placed into operation and renovated, but also of already operating enterprises. The turnover of manpower, as is known, decreases the level of skills and, hence, is conducive to the slowing of the progress of trains and the decrease of the work pace at stations.

In solving the problem of improving traffic and expediting the car turnaround the comprehensive implementation of measures of both a long-range and a current nature is coming to the forefront today. These measures should be implemented both at enterprises of rail transport and in other sectors of the national economy, which are connected with the sending and receipt of freight and the delivery of equipment to the railroads.

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FREIGHT TRANSPORT EFFICIENCY INCREASED

Moscow ZHELEZNODOROZHNYY TRANSPORT in Russian No 3, 1980 pp 42-47

[Article by L. Mukhamedgaliyev, chief of the Kokchetav Department of the Tselinnyy Railroad (Kokchetav): "Increase of the Efficiency of Transport Work"]

[Text] The Petropavlovsk-Kokchetav Line, which was build in 1922 to supply grain to the industrial centers of Russia, during the years of Soviet power has been transformed into a mighty transportation artery, which meets the needs of the national economy of Northern Kazakhstan for the transportation of freight and passengers. During the development of the virgin lands alone the network of the Kokchetav Department has been enlarged nearly threefold. The department serves the rayons of Kokchetavskaya, Severo-Kazakhstanskaya, Tselinogradskaya and Kustanayskaya oblasts, where 86 percent of the total amount of transport work is performed. More than 30 grain loading stations are concentrated here. For the transportation of grain, Ekibastuz coals and other national economic freight the sections of the department have been equipped with automatic blocking and centralized traffic control, rails of the heavy-duty type on a ballast base have been laid on the route, more powerful train engines have been introduced.

A number of other measures on the increase of the traffic and carrying capacity and the development of freight service have been implemented. Raised tracks have been built at the stations using the resources of the department, the support stations have been equipped with various materials-handling machines and machinery. At present the level of mechanization of freight handling is about 94 percent.

As a result of the work performed on the strengthening of the technical base and the introduction of advanced technology and the extensive development of socialist competition for the most efficient use of the rolling stock the collective of the department is successfully coping with the constantly increasing freight turnover. During the years, which have passed since the start of the development of the virgin land, the volume of freight traffic has increased 6.8-fold, passenger traffic--4.5-fold. At the same time the sectional speed and the average weight of a freight train have increased 1.6-fold, the labor productivity rose 4.6-fold, while the average wage of railroad workers increased 2.3-fold.

In fulfilling the responsible tasks or the improvement of the organization of the transportation of national economic freight, the collective of the department is persistently striving for the successful fulfillment of the assignments of the final year of the five-year plan and the higher obligations which were assumed in honor of the 110th anniversary of the birth of V. I. Lenin.

The Speeding Up of the Car Turnaround

In conformity with Order No 30Ts a number of major organizational and technical measures, which are aimed at expediting the passage of the volumes of car traffic, are being implemented in the department. They envisage the shortening of the layover of trains at the sectional and freight stations, the increase of the sectional speed, the shortening of the layover of cars for loading operations. Thus, radio communications between the drivers of the switchers and the yardmasters have been introduced at five major yards. At the Taincha, Kokchetav and Kurort-Borovoye stations radio is used extensively in the technical offices for transferring trains. PONAB instruments have been installed on the approaches to eight stations. The switchers have been replaced by more powerful ones. New technological processes of the operation of the stations have been introduced, which take into account the introduction of new equipment and the improvement of the methods of work, the number of stations, at which the transferring of through trains is carried out, has been reduced.

Teletype equipment has been installed at the Taincha, Kokchetav and Kurort-Borovoye stations in order to organize data communications. Telegram-waybills for the trains, which are proceeding for breaking up, are transmitted by it to the Petropavlovsk, Tselinograd and Karaganda stations. Firm schedules of the processing of the loading areas have been introduced at all the support stations.

Large amounts of through transportation are carried out on the sections of the department. A large number of empty gondolas, which are received from the South Urals Railroad, are conveyed by unit trains for loading to the Ekibastuz Coal Basin.

The introduction of the new technology of train operation made it possible to increase the journey speed of such trains to 900 km/day, and on some days to 950-1,000 km/day. Steps on the considerable shortening of the layover of trains at technical yards for handling (up to 70 percent of the trains are handled in 15-20 minutes instead of 30 minutes) and on the organization of the accelerated passage of trains through the traffic control sections on the basis of socialist agreements between the train dispatchers and the drivers and the strict monitoring of the condition of the rolling stock on express trains by all the services, which are involved in their passage (the transport workers, the railway engineers, the car workers, the communications workers) were taken for this purpose. The new technology provides for the conveyance of up to 80 percent of the empty gondolas to the Tselinograd Department via the Ak-Kul' Station up to 600.

Much attention is being devoted to expediting the movement of empty box cars, which arrive at the stations for the preparation of rolling stock for the loading of grain. During the period of mass grain transportation the workers of the car service ensure the passage of cars for loading at the two traffic control sections without maintenance inspection.

The decisive factor of the successful performance of the transportation of grain is the careful preparation of the grain loading stations. Well in advance of the start of the harvesting season the sidings are repaired, the washing stations, the station and weighing services are readied.

On the basis of an analysis the assignment of loading yards to the stations, at which the points for preparing box cars for loading are located, was established to ensure the efficient regulation of the flows of empty box cars, the optimum work load of the washing stations and the elimination of the run of rolling stock in opposite directions. The conveyance of cars is carried out by unit trains or in large groups, which are coupled to through trains, as well as by standby engines.

The mass loading and shipment of grain are organized by consignment and multistage routes on the basis of a monthly plan, which has been agreed upon by the oblast administrations of grain products. In all the transportation of 90 percent of the grain has been itinerated in the department. The main grain loading stations of Novo-Uritskoye, Kzyl-Tu, Kokchetav, Peski Tselinnyye and Susly ship more than half of this amount.

In order to ensure the precise and smooth operation of the grain conveyor during this crucial period managers of the department are sent to the main loading stations, the traffic control staff of the division of traffic and stations is increased.

Train traffic controllers V. M. Gromenkov, V. V. Chaykovskiy, L. Solunya, T. A. Abilov and others are achieving high rates of the passage of trains. Traffic controller V. M. Gromenkov serves the Taincha - Kurort-Borovoye section. The main freight stations of the department--Taincha, Kokchetav, Kurort-Borovoye, Chaglinka, Zhana-Ashchi and Azat--are located here. In order to successfully fulfill the assignments and the shift plan Comrade Gromenkov familiarizes himself well in advance of the start of the duty period with the situation at the stations of the section and the approach of trains from all directions, the availability of sorting trains for the Kokchetav junction, the number and destination of the ready trains at the section yards, the location of the dispatch engines and the pick-up trains. The strict monitoring of the position of the trains, the processing of cars on the yards and switching operations is carried out while on watch.

Particular attention is devoted to assuring traffic safety. For this purpose the head traffic controller each month goes to the line stations, where along with checks he conducts personal interviews and briefings with the yardmasters, the station attendants and the drivers of the switchers.

The Application of the Know-How of the Lyublino Railroad Workers

More than 40 percent of the total amount of unloading of the department and about 20 percent of the loading of freight are performed at the Kokchetav Station, which is loacted at the junction of the Northern Siberian and Turkestan-Siberian routes. Following the experience of the Lyublino railroad workers a number of organizational and technical measures were implemented here, which made it possible to shorten the layover of a local car by 14 hr.

Previously the station had only 10 tracks, including 6 reception and departure sidings and 4 classification sidings. The entire volume of car traffic was received for unloading and was forwarded after the loading operations only by pick-up trains, which were formed on short lines. In the department the Taincha and Kurort-Borovoye stations performed the main work on forming the pick-up trains.

With the growth of the industry of the city and the number of sidings the amounts of freight handling work increased. The station, which was poorly equipped, ceased to meet the transportation needs of the national economy. The layovers of both local and through cars with freight handling increased significantly.

In this connection the council of chief engineers of the junction adopted the decision to increase the technical equipment of the station by means of its own resources with the use of the know-how of the collective of the Lyublino-Sortirovochnoye Station of the Moscow Railroad. In conformity with the outlined plan new classification tracks and facilities were built at the station, the sorting tracks were lengthened, all the switches were equipped with interlocking, air blast cleaning was put into operation. The lighting of the yard tracks was increased by the installation of new spotlight poles and the replacement on all the existing poles of the lamps with xenon and halogen lamps. Loudspeaker communications were implemented in the building of the technical office, a stationary ZhRU radio station was installed. Portable Dnepr radio transceivers were introduced for transferring trains.

Much work was done on strengthening the freight service of the station on its own. A new raised track, a container yard, a yard for the unloading of timber freight and other areas of loading work were built.

All the switchers were equipped with ZhRULS radio transceivers, while the yardmasters also received small Tyul'pan and Dnepr radio transceivers.

A data center, which has teletype communications with the Taincha and Kurort-Borovoye stations, was organized.

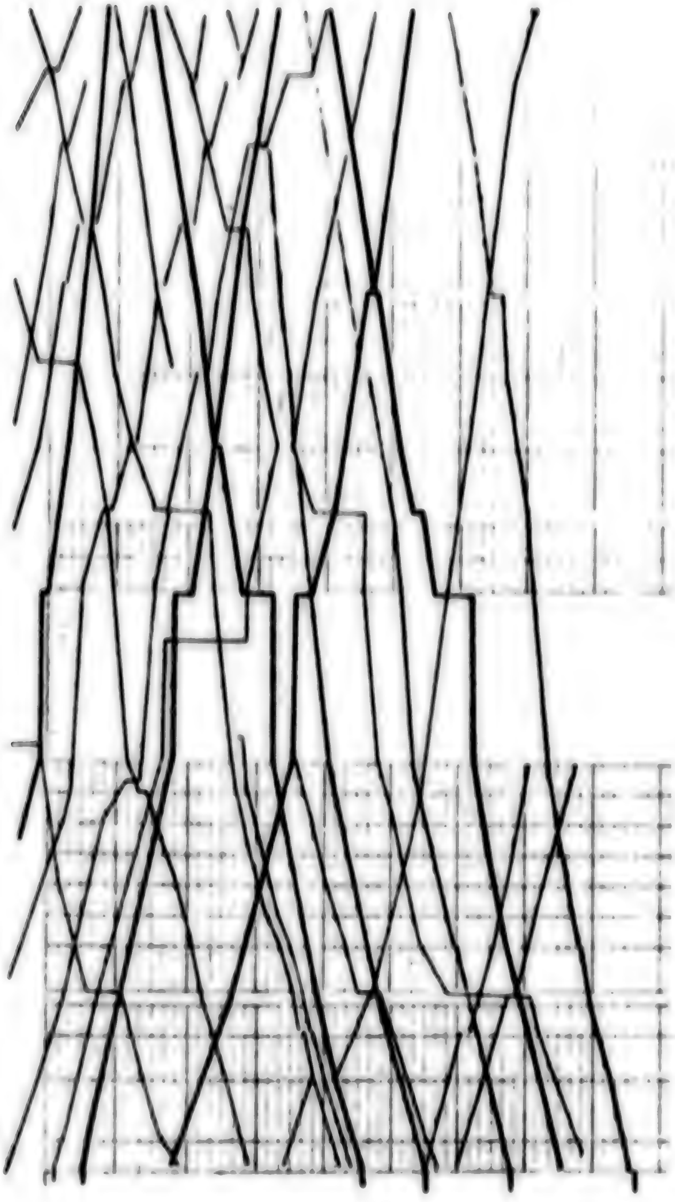

Diagram of the Express Passage of Unit Trains Made up of Empty Gondolas

All this enabled the collective of the Kokchetav Station in a short time to achieve an improvement of all the operating indicators and made it possible to revise the plan of the formation of trains for the department as a whole. Previously the local car traffic, which was sent to Kokchetav, was handled in addition at the Taincha and Kurort-Borovoye stations, which slowed the movement of local freight by more than 12 hr. The reprocessing of cars unjustifiedly increased the classification work at the sectional yards, which has a marked effect on the turnaround of the local car. The new plan of formation envisages the organization of the trains destined for Kokchetav at the Petropavlovsk and Tselinograd stations. This reduces the operating costs by more than 100,000 rubles a year.

At present much organizing work is being performed at the station on the further improvement of the technological process, the application of advanced know-how, the introduction of the scientific organization of labor and the increase of labor and technological discipline.

Every year the daily car turnaround increases on the average by 6 percent, while during the period of mass agricultural transportation it increases by 13-14 percent on the average in a month. In order to handle the increasing amounts of work on the gravity yard the arrangement of the centralization of switches and signals has been changed, which has made it possible to increase the length of the train being pulled out for breaking up by 13 cars. The time for breaking up each train has been shortened by 20 minutes. A second site of derailers has been installed in the midst of the yard, which has reduced the number of runs for backing and expedited the breaking up onto free classification tracks. The regions of service of radio communications of the gravity yard and other switchers were separated. The work of the gravity yard and make-up brigades was organized in "one person" without assistants.

The method of traffic control management is the basis of the efficient fulfillment of the technological process. The switch controller directs the work of the collective of the shift, while the gravity yard attendant organizes the operations on the breaking up and formation of trains on the even side and the attendant for the switching post of the electrical centralization of switches and signals organizes them on the odd side.

The switch controller gives to the performers the assignment on the formation and breaking up of trains, the delivery and removal of cars over the loudspeaker and radio, as well as via direct telephone communications. The control of the switches and signals during the formation of trains on the classification yard is carried out from the switching posts of electrical centralization by the attendants for the gravity yard and the post of electrical centralization. An arrangement of the individual air blasting of the switches on commands issued from the switching posts has been developed and introduced by the efforts of the workers of the Kokchetav Division of Signaling and Communications for ensuring continuous switching work during the winter months. For the purposes of further increasing the speed of the breaking up of trains it is planned to smooth the grade of the tracks of the classification yard.

The comprehensive improvement of the technology, the introduction of new equipment and the increase of the technical level and production skills of the workers of the station are promoting the systematic shortening of the layover of rolling stock. In four years of the five-year plan more than 30,600 cars have been released for additional shipments of national economic freight.

The socialist competition of the collectives of the Kokchetav and Kurort-Borovoye stations is being developed extensively. The shifts of switch controllers G. P. Korotun and S. P. Bereznev are in the lead of the competition. Yardmaster K. I. Brylov, station attendant T. A. Nikolayeva, gravity yard attendant A. Ye. Babenko, car speed regulator S. N. Konovalov, acceptance inspectors N. N. Sindyukov, A. L. Dergachuk and N. Kh. Vanyushkina and many other workers of the station are working creatively.

Development of the Department

The workers of the technical services of the department are persistently striving for an increase of the efficiency of the freight handling process. The innovators of the engine service have strengthened the repair base of diesel engines at the Kurort-Borovoye and Peski Tselinnyye engine barns. Work on the placement into operation of a shop for the major periodic repair of diesel engines, as well as for the reconditioning and repair of storage batteries and the repair of sections of the condenser has been performed by the efforts of the workers of the Kurort-Borovoye Engine Barn. The shops of the barn have been equipped with benches and equipment for the breaking in of hydraulic clutches, turbocompressors, water pumps and electric traction motors, the washing of the sections of the radiator and condenser, the removal of the crankshaft of the diesel, the removal of the armatures of the main generators, the repair of the vertical gear of the motor shaft bearing. The technology of the reconditioning of storage batteries and cylinder liners and argon welding has been assimilated at the barn. A simulator for detecting malfunctions in the electrical circuits of the 2TE10L diesel engine has been produced for the training of the engine brigades on their own.

During the 11th Five-Year Plan the collective of the department has to cope with a considerable increase of the freight turnover on the sections of the Northern Siberian route. For this purpose work on the electrification of the lines and the laying of additional main tracks, the construction of traffic control centralization and the increase of the technical equipment of the Peski Tselinnyye Station and the Peski Tselinnyye - Novo-Uritskoye section with the development of all the stations, the opening of new block stations and the introduction of electrical and traffic control centralization is being carried out at the stations and on the open lines.

The freight service is being expanded. At the Kokchetav Station the construction at its own expense of a mechanized complex, which is equipped with highly productive materials-handling machinery and various detachable load-lifting devices, is being completed. In order to handle large-tonnage containers it is planned to use powerful electric gantry cranes and reloading cranes, which are equipped with automatic gripping devices.

Measures on the improvement of the technical condition and the increase of the operating reliability of the rolling stock have been drawn up and are being implemented in the department. The renovation of the

Kurort-Borovoye Engine Barn, the construction of a diesel engine barn at the Kokchetav II Station and a car barn at the Peski Tselinnyye Station are planned.

The Kokchetav railroad workers are thoroughly aware of the responsibility which has been placed on the workers of the steel main lines by the CPSU Central Committee and Comrade L. I. Brezhnev personally for the urgent improvement of the organization of the freight handling process. In conformity with the decisions of the November (1979) CPSU Central Committee Plenum comprehensive organizational and technical measures have been drawn up and are being implemented, which are aimed at the increase of the amounts of traffic and the conveyance of cars through junction stations, the speeding up of the car turnaround by means of the increase of the sectional and running speed and the shortening of the layover of a car for loading operations and in the technical yards, the assurance of the timely delivery of local freight and the unloading of cars, the highly productive use of switching equipment and rolling stock. Along with this the problems of the improvement of the maintenance and repair of the diesel engines, the assurance of their great reliability, the increase of the quality of the preparation of cars for the loading of grain, the current maintenance and repair of the track, the increase of the operating reliability of the power supply equipment, automatic equipment, remote control and communications are being solved.

The comprehensive plan of the technical and social development of the department provides for the extensive application of the advanced know-how of the Leningrad and Odessa transport workers, the collective of the South Urals Railroad and the industrial enterprises of Chelyabinskaya Oblast, the Moscow Railroad and the Lyublino-Sortirovochnoye Station. In order to improve the conditions of the work and relaxation of the railroad workers a general building has been built at the Kurort-Borovoye Engine Barn, the construction of the same kind of building for the car workers of the station is being carried out. Moreover, it is planned to build 49,000 m^2 of living space, including a 60-apartment building at the Kokchetav Station, five apartment houses at the Kurort-Borovoye Station and four 24-apartment buildings at the Taincha Station. This year a new Pioneer camp will be put into operation on Kotyrkul' Lake, in 1981 a holiday hotel will be put into operation on Shchuch'ye Lake.

The further development of the labor activeness of the railroad workers of the department will promote the improvement of the transportation service of the national economy.

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RAILROAD

TYUMEN'-TOBOLSK-SURGUT-URENGOY RR CONSTRUCTION

Moscow EKONOMICHESKAYA GAZETA in Russian No. 21, May 80 p 1

[Text] Development of the production complex of the West Siberian territory, which has now become a principal source of fuel energy for the country, in many respects depends on transportation. To serve the regions of the Tyumen' oblast where oil and gas are being extracted, a single transportation system is being built, the basis of which will be the Tyumen'-Tobolsk- Surgut- Urengoy railroad.

At the beginning of the 9th Five-year plan, the 220 kilometer line from Tyumen' to Tobolsk came into operation. In 1978 the steel track was brought up to Surgut (490 kilometers from Tobolsk). Farther on, there is a fork in the road. A 216-kilometer line goes to the east to the young city of oilmen, Nizhnevartovsk. It was put in operation last year. To the north the route is being extended toward the Arctic circle, to the gas fields at Urengoy.

The"Siberian meridian",as the almost 600-kilometer rail line from Surgut to Urengoy is called, is being built in accordance with a decision of the 25th Party Congress. In this there is the prospect of moving more than 500,000,000 cubic meters of earth and the building of 376 culverts including 32 large or medium size bridges. The huge amount of work is being carried out in swampy, flooded territory, having an inclement climate and complicated geological and engineering conditions.

It is notable that the first kilometer of the railroad on the Surgut to Urengoy line was laid down on the day of free communist labor for Lenin in 1976, and, by the 110th anniversary of V. I. Lenin's birth, the builders had brought the track 470 kilometers and opened it for train operation to Tarko-Sale - the regional center of the Yamalo-Nenetskiy autonomous district.

The personnel of the Tyumenstroyput' [Tyumen' Railroad Construction] administration and the subcontracting organizations are carrying out the work at an accelerated pace. Corrugated metal tube culverts, small pile-and-trestle bridges, and pile-covers in the structure of large and medium bridges have found broad application along the route.

Already, the first 100 kilometers of the mainline have demonstrated its economic effectiveness. Along the whole extent of the rail laying, the route right now is beginning to serve the national economy. Along a newly-constructed section go trains for oilmen, gas workers, geologists, and constructors. Already, more than 3,500,000 tons of national economic cargoes have been delivered here. Along the line from Tyumen' approximately 90,000,000 tons have been transported, more than 24,000,000 tons of them in the course of temporary operation.

An excellent work crew has been put together on the construction of the "Siberian meridian". For successes in the construction of the railroad, the West Siberian administration of the construction, Tyumenstroyput', was awarded the Order of the Labor Red Banner. Appearing as leaders in the competition are: Hero of Socialist Labor and foreman of a crew of erectors, V. Molozin, foreman of erectors A. Mokhov, excavator operator N. Tarasenko, dump truck driver A. Sukhodoyev, and fitter A. Yezhukov.

The transport builders have pledged that the line will be open for the movement of trains to Urengoy by the 63rd anniversary of the Great October Socialist Revolution.

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OCEAN AND RIVER

BRIEFS

SHIPPING TO ARCTIC--The motorship "Borya Tsarikov" is en route to Mys Shmidta on its first voyage from Vanino this year with material for construction workers in settlements along the coast of the Arctic Ocean. [SK130132 Khabarovsk Domestic Service in Russian 0930 GMT 10 Jun 80]

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